

Remarks

Claims 1-20 remain in the application. Applicants note with appreciation allowance of claims 1-14. Claim 15 has been amended to recite that fluorides are vented from the "through a conduit", and alumina is added to the cell "through said conduit." This limitation is present in claim 1, therefore, no new matter has been added. It is respectfully submitted that claims 15-20 are now in condition for allowance.

In the Office Action, claims 15-20 were rejected as follows:

Claims 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beck et al (US 5,284,562) in view of Gianfranco (US 4,770,752).

Beck et al teach the invention substantially as claimed. Beck et al teach (see abstract, figure 6, col. 1, lines 17-60 and col. 11, line 12 to col. 12, line 26) a process for the production of aluminum from alumina dissolved in a molten salt electrolyte contained in a cell free of frozen crust comprising (a) providing a molten salt electrolyte (containing one or more alkali metal fluorides) at 660-800°C, (b) providing a plurality of anodes and cathodes disposed in the electrolyte which contains dissolved alumina, (c) passing an electrical current from the anodes, through the electrolyte and into the cathodes, which deposits aluminum on the cathode, (d) venting volatile material (to the atmosphere) and (e) adding alumina to the cell substantially continuously. Beck et al do not teach contacting the alumina with the fluoride containing volatile material, capturing volatile material on the alumina and returning the fluorides containing volatile material to the electrolyte with the alumina.

Gianfranco teaches (see abstract, figure 3 and col. 7, lines 29-54) a method whereby the volatile materials from an aluminum smelter are passed through a conduit (21, 22, 27) and are adsorbed onto alumina that is then fed into the molten electrolyte, thereby recycling the volatile material (HF) back into the melt.

Therefore, it would have been obvious to one of ordinary skill in the art to have added the volatile material recycling means of Gianfranco in the process of Beck et al, thereby venting the volatile material and absorbing it onto the alumina feed, because the contacting means of Gianfranco provide for recycling of the volatile HF gases, thus reducing losses in the process.

Regarding the fact that Gianfranco teaches a non-continuous feeding where the electrolyte has a frozen crust, it has been held that making a batch process continuous is within the ability of one of ordinary skill in the art (see MPEP 2144.04.V.E.), thus, it would have been within the expected

skill of a routineer in the art to have adapted the apparatus of Gianfranco to operate to continuously feed alumina to the non-frozen crust apparatus of Beck et al.

Regarding claim 16, Beck et al teach (see col. 1, lines 54-56) maintaining the bath at 660-800°C.

Regarding claim 17, Beck et al teach (see paragraph spanning cols. 8 and 9) that the current density was 0.5 A/cm².

Regarding claim 18, Beck et al teach (see abstract) that the anodes were made from a Ni-Cu-Fe alloy.

Regarding claim 19, Beck et al teach (see col. 4, lines 17-21) that the cathodes were made from TiB₂.

Regarding claim 20, Beck et al teach (see figure 6) arranging the anodes and cathodes vertically in alternating relationship.

Further, the Office Action noted at paragraph 4e:

Gianfranco is silent and does not disclose introducing alumina and capturing volatile material on the alumina as it is introduced to the cell. In response, when the method of Gianfranco is adapted to operate in a continuous manner with the method of Beck et al, the capturing step would occur as the alumina is introduced into the cell.

Thus, as noted above, claim 15 has been amended to recite that the fluorides are vented "through a conduit" and alumina is added to the cell "through said conduit", thereby capturing the volatile material on the alumina as it is introduced to the cell. As noted in the Office Action, clearly, Gianfranco is *silent* with respect to and does not disclose introducing alumina and capturing volatile material on the alumina as it is introduced to the cell. Thus, it is respectfully submitted that claim 15 is patentable over Gianfranco.

Claims 16-20 are dependent on claim 15 and are patentable over Gianfranco for the same reasons as set forth above.

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In view of the above amendments and remarks, it will be noted that a sincere attempt has been made to place this application in condition for allowance. Therefore, reexamination and reconsideration are requested and allowance solicited at an early date.

Respectfully submitted,

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